

Bellringer

- What is space?
- What are the planets of the solar system? In order from closest to furthest away from the sun.  
**M V E M J S U N**

Gravity

- Draw the moon phases.  
Name
- What is the difference between the solar system + a galaxy?

The diagrams illustrate the moon phases and the relationship between the solar system, galaxy, and universe. The moon phases are shown in two rows: New, Waxing Crescent, 1/2, Waxing Gibbous, Full Moon in the top row, and Full Moon, Waning Gibbous, 1/2, Waning Crescent, New in the bottom row. Arrows indicate the progression from one phase to the next. Below the moon phases, a diagram shows the hierarchy of the universe: Solar System → Galaxy (Milk) → Universe, with arrows indicating the progression from the solar system to the galaxy and then to the universe.

Grade: 9th

Subject: Earth Science

Date:

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1 The sun converts matter into energy in the...

- A corona
- B convection zone
- C radiative zone
- D core

2 Most of the sun's energy is a result of ...

- A nuclear fusion
- B nuclear fission
- C atomic reactions
- D coronal mass ejection

3 When hydrogen nuclei fuse into helium nuclei...

- A the nuclei die
- B energy is released
- C particles collide
- D particles neutralize

4 In the sun's radiative zone, energy moves...

- A by convection
- B by radiation
- C by solar wind
- D by solar ejection

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5 The magnetic field of the sun's corona...

- A stops some subatomic particles
- B stops all subatomic particles
- C cannot stop any subatomic particles
- D causes Earth to be polarized

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6 The area between the radiative zone and the photosphere where energy is carried upward by the movement of gases is called the \_\_\_\_\_.

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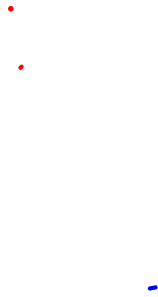
7 The visible surface of the sun is known as the photosphere\_\_\_\_\_.

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8 The outermost layer of the sun's atmosphere is known as the corona.



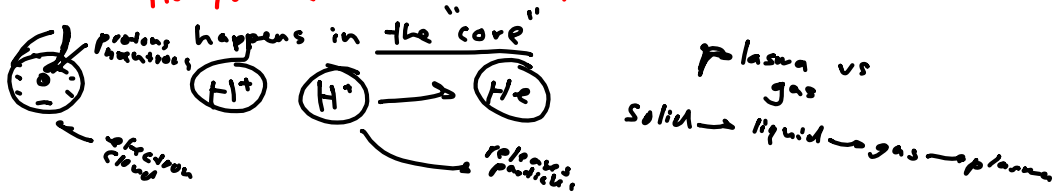
9 The chromosphere zone is the thin layer of gases, just above the photosphere...

## Bellringer

→ What is the difference between nuclear (fusion) and nuclear fission?

atoms collide & fuse together → splitting an atom → releases a particle

→ How/where does the sun perform nuclear fusion?



→ What are the 3 layers of the sun's interior? core, radiative, convective

→ What are the 3 layers of the sun's atmosphere? photosphere, chromosphere, corona

$$\frac{18}{x} = \frac{10}{1}$$

$$\frac{20}{x} = \frac{10}{1}$$

$$\begin{aligned} \text{SUN} &= 1.4 \times 10^9 \text{ m} \\ \text{Earth} &= 1.3 \times 10^7 \text{ m} \\ \text{Jupiter} &= 1.4 \times 10^8 \text{ m} \end{aligned}$$

$$\frac{18 \text{ cm } D_{\text{sun}}}{0.17 \text{ cm } D_{\text{Earth}}} = \frac{107}{1} = \frac{18 \text{ cm}}{1.8 \text{ cm}} = \frac{10}{1}$$

1.7 mm  
0.8 mm

1 mm

$$\begin{aligned}
 D_{\text{sun}} &= 1.4 \times 10^9 \text{ m} \\
 D_{\text{jupiter}} &= 1.4 \times 10^8 \text{ m} \\
 D_{\text{Earth}} &= 1.3 \times 10^7 \text{ m}
 \end{aligned}$$

$\frac{1.4}{1.4} \times 10^1$   
 $\frac{1.4}{1.3} \times 10^2 = 2.5/2 = 1.25 \text{ cm}$   
 $2.3/1.15 = 2$   
 $32.5 / (14) = \frac{1.43}{2} = .715 \text{ cm Jupiter}$   
 $32.5 / (100) = \frac{.35}{2} = .175 \text{ cm Earth}$

## Bellringer

- What is the difference between a
  - Solar system, galaxy, and universe?
    - Starting w/ the Sun.
- List the order of the planets:
  - M V E M J S U N
- What are the 3 layers of the sun?
  - core, radiative, convective
  - heat
- What are the 3 layers of the sun's atmosphere?
  - photo, chromo, corona
- How does the sun make energy?
  - Nuclear fusion
  - $H + H \rightarrow He$ 
    - neutrino



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1 Auroras are frequently seen...

- A near the equator
- ☒ B after solar flares
- C before a sunspot cycle
- D every 11 years

2 What temperature can a solar flare reach?

A 15,000,000 C

B 1,000,000 C

C 20,000,000 C

D 2,000,000 C

3 Which of the following is NOT a solar ejection?

A solar flare

B coronal mass ejection

C prominence

D sunspot

4 Sunspots vary in a cycle that lasts about...

- A 100,000 years
- B 1,100 years
- C 110 years
- D 11 years

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5 Strong magnetic fields on regions of the sun lead to sunspots because...

- ☒ A convection slows and energy decreases
- B convection increases and energy increases
- C radiation slows and energy decreases
- D radiation increases and energy increases

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6 A sudden outward eruption of electrically charged particles is known as a \_\_\_\_\_.

solar flare

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7 A part of the coronal gas thrown into space by the sun is called a ...

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8 A loop of incandescent gas that extends above the photosphere is called a \_\_\_\_\_.

prominence

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9 A cooler, dark area of the photosphere, with a strong magnetic field is called a sunspot.

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- 10 A colored light produced when charged particles from solar wind react with Earth's upper atmosphere is called a(n) aurora.

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### Bellringer

- What is the sun made out of? +1 + He  
99%  
Hydrogen → 75%      Helium → 24%
- What are the 3 layers of the sun's interior?  
Core, convective, radiative
- What are the 3 layers of the sun's atmosphere?  
Photosphere, chromosphere, Corona